

**A CLINICAL FIELD TRIAL TO DETERMINE:**

**The Efficacy of Oxytetracycline-medicated Feed to Control Mortality of Juvenile Steelhead Trout *Oncorhynchus mykiss* Caused by Columnaris, Causative Agent *Flavobacterium columnare*, Study #04.**

**BOZ-98-OTF-04**

**ORIGINAL**

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## Abstract

The United States Fish and Wildlife Service's (USFWS) National Investigational New Animal Drug Office (NIO) designed and conducted an efficacy study to generate data needed to obtain U.S. Food and Drug Administration approval for the use of oxytetracycline-medicated feed to control mortality in hatchery-reared salmonids diagnosed with columnaris, causative agent *Flavobacterium columnare*. The study was conducted at the USFWS Coleman National Fish Hatchery (NFH; Anderson, CA) by staff from the NIO and the Coleman NFH following guidelines described in Study Protocol Number OTF-98-EFF. The objective of this study was to compare mortality between juvenile steelhead trout *Oncorhynchus mykiss* fed oxytetracycline-medicated feed, and juvenile steelhead trout fed unmedicated feed. Fish used in this study had been diagnosed with columnaris by microscopic examination of gram-stained slides of spleen and gill, and identification of columnaris cultures grown on media that had been streaked with kidney, spleen, gill, and skin of several test fish. On the first day of the study, test fish held in four production tanks were distributed approximately equally among eight test tanks. A completely randomized design procedure was used to assign a treatment condition of either "treated" or "untreated" to each test tank. Test fish in four of the eight test tanks were fed medicated feed at a target dosage of 3.75 g oxytetracycline/100 lbs of fish/day for 10 consecutive days. Test fish in the other four test tanks were fed unmedicated feed during the same 10-d

period. Following the treatment period, test fish in all eight test tanks were fed unmedicated feed. Blinding techniques were employed to ensure that study participants involved in day-to-day data collection did not know which test tanks of fish were fed medicated feed. The study lasted 25 d and consisted of a 1-d acclimation period, a 10-d treatment period, and a 14-d post-treatment period. Mortality that occurred during the treatment and post-treatment periods of the study was the primary response variable. Percent total mortality for each test tank was calculated by dividing the number of dead fish removed from each tank by the number of fish transferred to each tank at the beginning of the study. The number of fish transferred to each tank at the beginning of the study were accurately determined by counting the number of fish remaining alive at the end of the study and adding this number to the number of dead fish removed from each tank during the treatment and post-treatment periods. At the end of the study, mean percent total mortality in the treated group (17.3%) was significantly less ( $P < 0.001$ ) than mean percent total mortality in the untreated group (74.8%). Test fish were maintained under conditions adequate for rearing healthy salmonids, and mortality observed in the study was attributed to infection of systemic columnaris. Consequently, results from this study demonstrated that the target treatment regimen of 3.75 g oxytetracycline/100 lbs fish/day fed on 10 consecutive days was effective in controlling mortality in juvenile steelhead trout caused by columnaris.